
AMENDMENTS TO THE CLAIMS

1. (currently amended) A ~~[[M]]method~~ for the plastic deformation of polymers, ~~characterized in that a~~ comprising treating ~~polymers is treated~~ with electromagnetic radiation having a wavelength in the range from 0.8 to 100 μm , and with simultaneously treating the ~~polymers with~~ ~~action of~~ pressure and shearing and thermal energy.
2. (currently amended) The ~~[[M]]method~~ according to ~~[[C]]claim 1,~~ ~~characterized in that~~ wherein the heat is supplied to the polymer or heat is removed from the polymer during the method.
3. (currently amended) The ~~[[M]]method~~ according to ~~[[C]]claim 1 or 2,~~ ~~characterized in that~~ wherein the electromagnetic radiation is laser radiation.
4. (currently amended) The ~~[[M]]method~~ according to any of ~~[[C]]claim[[s]] 4 to 3,~~ ~~characterized in that~~ wherein the electromagnetic radiation has a wavelength in the range from 1 to 50 μm .
5. (currently amended) The ~~[[M]]method~~ according to ~~any of~~ ~~[[C]]claim[[s]] 1 to 4,~~ ~~characterized in that~~ wherein the pressure acting on the polymer is in a range from 1 N/mm^2 to 5000 N/mm^2 .
6. (currently amended) The ~~[[M]]method~~ according to ~~any of~~ ~~[[C]]claim[[s]] 1 to 5,~~ ~~characterized in that~~ wherein the shearing is applied with a force or a torque such that a shear rate in the range from 10° to 10^6 s^{-1} acts on the polymer.
7. (currently amended) The ~~[[M]]method~~ according to ~~any of~~ ~~[[C]]claim[[s]] 1 to 6,~~ ~~characterized in that~~ wherein the polymer

comprises a polymer which can form intermolecular hydrogen bridge bonds.

8. (currently amended) The ~~[[M]]method~~ according to ~~[[C]]claim 7,~~
~~characterized in that~~ wherein the polymer which can form
intermolecular hydrogen bridge bonds is a polysaccharide or polyvinyl
alcohol.
9. (currently amended) The ~~[[M]]method~~ according to ~~[[C]]claim 8,~~
~~characterized in that~~ wherein the polymer which can form
intermolecular hydrogen bridge bonds is selected from the group
consisting of cellulose, chitin, polyvinyl alcohol, a constitutional isomer
of cellulose, a constitutional isomer of chitin ~~[[or]]~~ and a blend of one or
more of the above polymers.
10. (currently amended) The ~~[[M]]method~~ according to ~~[[C]]claim 9,~~
~~characterized in that~~ wherein the polymer which can form
intermolecular hydrogen bridge bonds is cellulose.
11. (currently amended) The ~~[[M]]method~~ according to ~~any of~~
~~[[C]]claim[[s]] 1 to 10,~~ wherein the polymer is
melted by means of electromagnetic radiation having a wavelength in
the range from 0.8 to 100 μm under the simultaneous action of
pressure and shearing and thermal energy and is then extruded ~~in a~~
~~manner known per to give films,~~ spun to give fibres or processed by
injection moulding to give a moulding.
12. (currently amended) An ~~[[A]]apparatus for carrying out the method~~
~~according to any of Claims 1 to 11,~~ characterized in that it comprises
comprising a means for holding a polymer, a means for exerting

pressure on the polymer, a means for shearing the polymer, a means for supplying or removing heat and a means for irradiating the polymer with electromagnetic radiation having a wavelength of from 0.8 to 100 μm .

13. (currently amended) An [[A]]apparatus according to [[C]]claim 12, ~~characterized in that~~ wherein the means for irradiating the polymer with electromagnetic radiation having a wavelength of from 0.8 to 100 μm is a laser.
14. (currently amended) An [[A]]apparatus according to [[C]]claim 12 ~~or 13~~, ~~characterized in that~~ wherein the means for shearing the polymer comprises two ram surfaces movable relative to one another.
15. (currently amended) An [[A]]apparatus according to [[C]]claim[[s]] 12 ~~to~~ 14, ~~characterized in that~~ wherein the means for exerting pressure on the polymer are also simultaneously the means by which the polymer is sheared.
16. (currently amended) A [[P]]polymer comprising cellulose or chitin, obtainable by the method according to ~~any of~~ [[C]]claim[[s]] 1 ~~to~~ 14.
17. (currently amended) The [[P]]polymer according to [[C]]claim 16, ~~characterized in that it~~ which is present as a film, fibre or moulding.